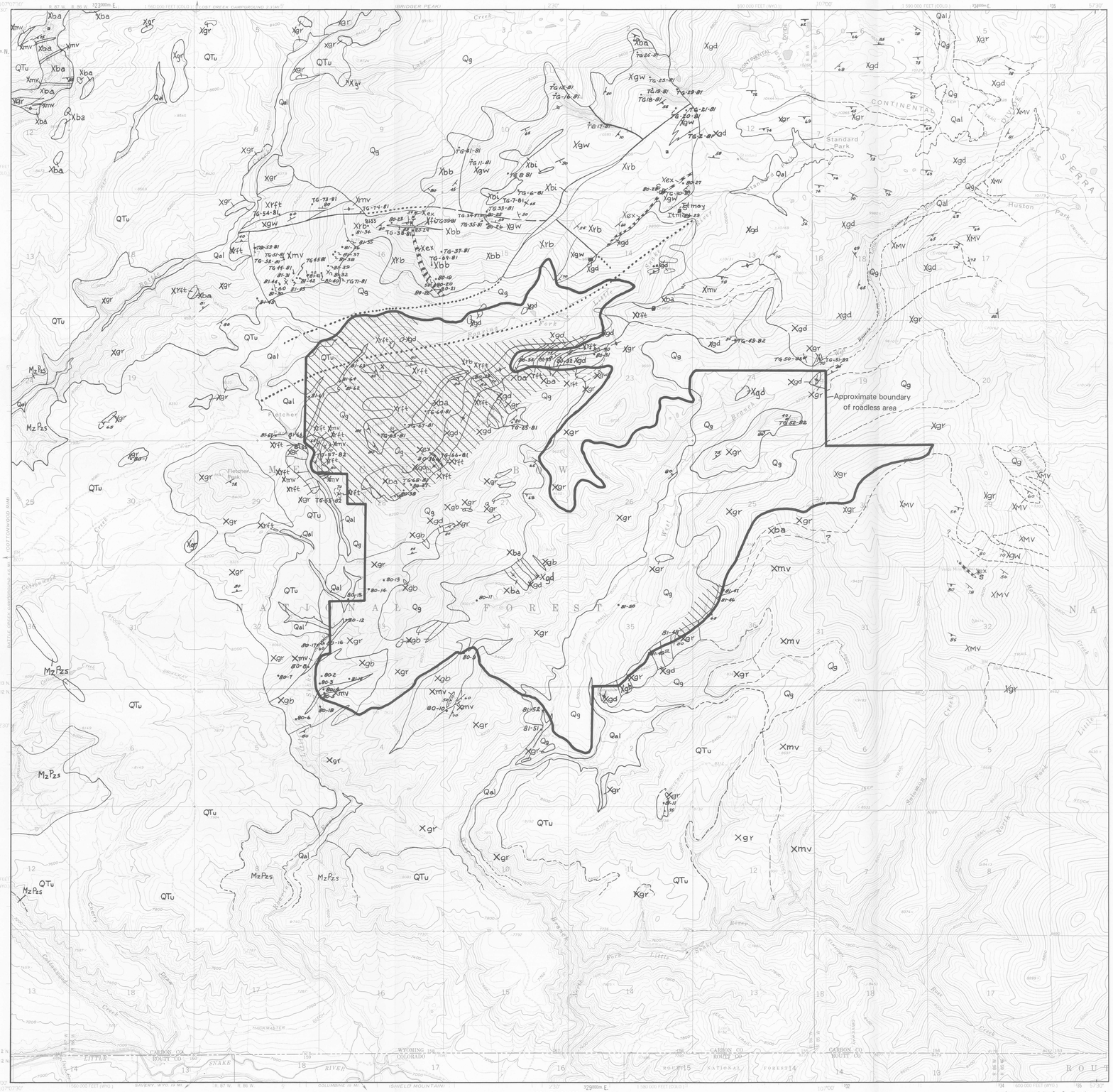
DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF-1637
PAMPHLET ACCOMPANIES MAP



Base from U.S. Geological Survey
Fletcher Peak, Solomon Creek, 1961

Geology mapped by R. S. Houston and T. G. Schmidt in 1981 and 1982

SCALE 1:24 000

1 0 ½ 0 1 MILE

1 0 .5 0 1 KILOMETER

CONTOUR INTERVAL 40 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

CORRELATION OF MAP UNITS

Qal	Holocene	QUATERNARY
Unconformity		
Qg	Pleistocene	
Unconformity		
QTu	Holocene to Miocene	QUATERNARY to TERTIARY
Unconformity		
MzPzs	Upper Cretaceous to Middle Pennsylvanian	CRETACEOUS to PENNSYLVANIAN
Unconformity		
Xgr, Xgb, Xgd, Xfi, Xbi	Proterozoic X	PROTEROZOIC
Xex, Xrb, Xbb, Xba, Xrft, Xmv, Xgw		

LIST OF MAP UNITS

Qal ALLUVIAL DEPOSITS (QUATERNARY)
Qg GLACIAL DEPOSITS (QUATERNARY)
QTu SAND AND GRAVEL (QUATERNARY) AND BROWNS PARK AND NORTH PARK FORMATIONS (MIOCENE), UNDIVIDED
MzPzs SEDIMENTARY ROCKS (MESOZOIC AND PALEOZOIC)
Xgr GRANITE (PROTEROZOIC X)--Contains aplmatite (a) near contacts
Xgb GABBRO (PROTEROZOIC X)
Xgd GRANODIORITE (PROTEROZOIC X)
Xfi FELSIC DIKE (PROTEROZOIC X)
Xbi MAFIC DIKE (PROTEROZOIC X)
Xex METASEDIMENTARY ROCKS (PROTEROZOIC X)--Chert, iron-formation, siliceous carbonate, and local sulfide (S) concentrations
Xrb RHYOLITE BRECCIA, FLOWS, SILLS (PROTEROZOIC X)
Xbb BASALT BRECCIA, LOCAL BASALT FLOWS, GRAYWACKE, AND RHYOLITE (PROTEROZOIC X)
Xba BASALT FLOWS (PROTEROZOIC X)
Xrft METAVOLCANIC ROCKS AND GRAYWACKE (PROTEROZOIC X)--Rhyolite flows, tuffs, and lapilli tuffs and local beds of mafic volcanics and graywacke
Xmv METAVOLCANIC AND METASEDIMENTARY ROCKS (PROTEROZOIC X)--Mixed succession composed chiefly of volcanic rocks and minor graywacke, arkose, and quartzite. Includes tuffs, lapilli tuffs, breccia, flows, and sills ranging in composition from basalt to rhyolite
Xgw METASEDIMENTARY ROCKS (PROTEROZOIC X)--Graywacke, arkose, quartzite, paraconglomerate, and local beds of volcanics

CONTACT--Solid line both known and inferred; dashed line from prior mapping or photogeology

FAULT--Dotted where concealed

SHEAR ZONE

STRIKE AND DIP OF FOLIATION

50 Inclined

Vertical

80 STRIKE AND DIP OF BEDS--In sedimentary rocks and laminae considered primary, such as graded beds in tuffs

70 OVERTURNED BEDS

S SULFIDE MINERALS

MINE SHAFT

PROSPECT

TG-66-81 SAMPLE LOCALITY AND NUMBER FOR GEOCHEMICAL
80-34 SAMPLE

MODERATE POTENTIAL FOR RESOURCES OF COPPER

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of geological and mineral resource potential surveys of the Huston Park Roadless Area in the Medicine Bow National Forest, Carbon County, Wyoming. Part of the Huston Park Roadless Area was classified as a further planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

MINERAL RESOURCE POTENTIAL
SUMMARY STATEMENT

The Huston Park Roadless Area is underlain, in part, by Proterozoic volcanic rocks that are believed to have been deposited in an island arc setting. Volcanic rocks of this type may contain stratiform sulfide deposits of significance, and several prospects that have geologic settings of stratiform sulfide deposits were identified during this study. All prospects were outside the Huston Park Roadless Area, however, and neither geologic nor geochemical results indicated mineralization in the volcanic rocks of the roadless area.

The bulk of the Huston Park Roadless Area is underlain by Proterozoic granite that intrudes the volcanic succession and older granodiorite and gabbro of the area. This granite was analyzed for tin and tungsten because tin- and tungesten-bearing granites are found in geologic settings like that of the southern Sierra Madre. Granites of the southern Sierra Madre do have some anomalous tin values, but of 11 samples from the Huston Park Roadless Area only one was found to have anomalous tin.

The presence of volcanic rocks that constitute favorable geologic terrane in the northern and southeastern parts of the Huston Park Roadless Area are the basis for assigning a moderate potential for copper resources to these parts of the roadless area.

INDEX MAP

INTRODUCTION

The Huston Park Roadless Area is in the southwestern Sierra Madre, Medicine Bow National Forest, Carbon County, Wyo. The roadless area and adjacent areas included in this investigation make a total of about 50 mi^2. The roadless area includes parts of the drainage areas of the Roaring Fork Branch of the Little Snake River and the West Branch of the North Fork of the Little Snake River. Elevations in the roadless area range from 8,000 to 9,200 ft; the lower elevations are characterized by open parks and meadows and the higher elevations are well timbered. The area is accessible by dirt roads that connect with Wyoming gravel road 70 between Encampment and Baggs; accessibility is limited to summer and early fall and to dry periods because these dirt roads are extremely hazardous after significant precipitation.

During 1981 and 1982, the U.S. Geological Survey and U.S. Bureau of Mines conducted field investigations to evaluate the mineral resource potential of the Huston Park Roadless Area. Field studies included geologic mapping and reconnaissance investigations, geochemical sampling of rocks and stream sediments, and a search for mineralized areas.

GEOLOGY

The Huston Park Roadless Area is underlain chiefly by metavolcanic, metasedimentary, and igneous rocks of Proterozoic age. The metavolcanic rocks range in composition from basalt to rhyolite and include a substantial volume of fragmental volcanic rocks. The metavolcanic and metasedimentary rocks are cut by a series of igneous rocks that are, from oldest: granodiorite, gabbro, and granite. The bulk of the southern and eastern parts of the roadless area is underlain by granite.

West-dipping Paleozoic and Mesozoic sedimentary rocks lie unconformably on the Proterozoic basement west of the roadless area. The entire rock succession, Proterozoic through Mesozoic, is covered by a gently dipping blanket of Tertiary sedimentary rocks that extends into the western part of the roadless area. Valleys and adjacent hillsides are covered with Pleistocene glacial drift in much of the roadless area, and Quaternary alluvium is present in stream valleys.

GEOCHEMISTRY

A total of 114 stream-sediment and rock samples were collected from the roadless area and adjacent regions and analyzed by a six-step spectrographic method. Selected samples were analyzed for gold, zinc, cadmium, bismuth, antimony, arsenic, and tin using atomic-absorption technique and for tungsten using quantitative spectrographic technique. None of the stream-sediment or rock samples from the roadless area were judged to have anomalous amounts of the elements analyzed. However, a number of samples from areas adjacent to the roadless area did have anomalous amounts of certain elements (table 1).

MINING AND MINERALIZED AREAS

Only one prospect was located in the Huston Park Roadless Area. This was in epidotized rhyolite in the northern part of the area (sec. 21). Review of courthouse and U.S. Bureau of Land Management records showed that Conoco has located mining claims north and east of the roadless area, and a few of the claims extend into the northern part of the roadless area.

Conoco is actively engaged in an exploration program for massive sulfide deposits near the roadless area. Conoco drilled three shallow holes and three deeper ones withtin a half mile of the north boundary. Results of the drilling have indicated favorable geologic environments for massive sulfide deposits, and some mineralized rock was encountered. Whether the mineralized area extends into the roadless area is not known at this time. An exploration program similar to Conoco's would be necessary to determine whether massive sulfide deposits actually occur within the roadless area.

Conoco has also located 18 claims in the Verde mine area about 0.75 mi east of the Huston Park Roadless Area. This locale also has a favorable geologic environment but no known sulfide mineralization. No drilling has been done on these claims.

ASSESSMENT OF MINERAL RESOURCE POTENTIAL

Stratiform sulfide

The Huston Park Roadless Area and adjacent areas are interpreted as island arc volcanic successions and are therefore favorable sites for the presence of stratiform sulfide deposits. Specific geologic environments favorable for stratiform sulfide (Sangster, 1972) exist at two localities north of the roadless area and sulfide minerals are present in one of these, the Itmay area. Exploration drilling will be required to determine if either or both of these prospects is indeed a verifiable stratiform occurrence. There are no surface indications of sulfide minerals nor were any geochemical anomalies noted in the northern and southeastern parts of the roadless area, but a moderate resource potential for copper is assigned to these areas because of the presence of metavolcanic rocks that constitute a favorable geologic terrane.

Tin and tungsten

The roadless area is underlain mostly by granite that invades the volcanic succession and older intrusive rocks. The metavolcanic and metasedimentary rocks are cut by a series of igneous rocks that are, from oldest: granodiorite, gabbro, and granite. The bulk of the southern and eastern parts of the roadless area is underlain by granite.

Of 11 samples of granite from the roadless area analyzed for tin, only 1 sample (TG65-81, table 1) contained tin (10 parts per million (ppm)). These results are not encouraging, but other samples from the same granite east of the roadless area contain as much as 20 ppm tin. The mean value of 10 samples analyzed from east of the area was 5.5 ppm, slightly above the suggested average value of about 3.5 ppm for silicic rocks (Bergenhoff and others, 1978). In addition, both tin and tungsten are present in mineral occurrences within and outside of the Huston Park Roadless Area (table 1). Other data also suggest that the concept of tin- and (or) tungsten-bearing granites should be considered further for the southern Sierra Madre. Some mineral deposits of the southern Sierra Madre are classed as skarns and the mineralization may be related to nearby granitic intrusions. One of these skarn occurrences has as much as 70 ppm tin and both tin and tungsten are present in vein-type deposits that may have elements derived from the granite. Because of negative analytical results in 10 of 11 samples there is no convincing evidence of a potential for tin and tungsten resources in the study area.

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Divis, A. F., 1976, Geology and geochemistry of Sierra Madre Range, Wyoming: Colorado School of Mines Quarterly, v. 71, no. 3, 127 p.

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Table 1.--Anomalous values shown by semiquantitative spectrographic analyses of rocks in and near the Huston Park Roadless Area, Carbon County, Wyoming

[Iron values in percent; all others in parts per million; n.d. indicates no data; leaders (---) indicate below anomaly minimum. All elements analyzed by a six-step semiquantitative method except Au and Sn which were analyzed by atomic absorption and W which was also analyzed by a quantitative spectrographic method. >, greater than]

Element--	Fe	Ag	Au	Cu	Mo	Pb	Sn	W	W (spec.)	Zn	Co	Ni	
Lower limit of detection	0.05	0.05	0.5	5	5	10	1	50	1	200	5	5	
Anomaly minimum	15%	0.5		300	20	50	2	50	2	500	100	300	
Sample No.													Rock type
80-20	---	---	n.d.	---	---	---	n.d.	---	n.d.	1,000	---	---	Siliceous carbonate.
80-27	20	---	n.d.	---	---	---	n.d.	---	n.d.	---	---	---	Iron-formation (magnetite).
80-28	15	20	n.d.	>20,000	50	---	n.d.	---	n.d.	---	1,000	300	Sulfide from mine dump (massive).
80-29	15	30	n.d.	>20,000	100	---	n.d.	---	n.d.	---	---	---	Do.
80-36	15	---	n.d.	---	---	---	n.d.	---	n.d.	---	---	---	Iron-formation (magnetite).
80-37	---	1	n.d.	---	---	150	n.d.	---	n.d.	---	---	---	Basalt.
81-31	20	---	n.d.	3,000	---	---	n.d.	---	n.d.	---	1,000	---	Iron-formation (magnetite).
81-32	---	20	n.d.	>20,000	---	200	n.d.	---	n.d.	---	---	---	Malachite veinlets in fractured rhyolite.
TG17-81	---	---	---	---	---	---	2	---	---	---	---	---	Graywacke.
TG20-81	---	---	---	---	---	---	---	---	2	---	---	---	Graywacke (breccia).
TG30-81	20	3	0.20	15,000	---	---	12	---	17	---	1,000	---	Sulfide from mine dump.
TG45-81	---	3	---	---	---	---	---	---	2	600	---	---	Dacitic agglomerate.
TG66-81	20	---	---	---	---	---	---	---	5	---	---	---	Iron-formation (magnetite) (graphitic).
TG73-81	20	---	.10	1,500	---	---	---	100	45	---	---	---	Iron-formation (hematite).
TG74-81	15	1	---	---	---	---	---	---	2	---	---	---	Basaltic agglomerate.
TG44-81	---	.5	---	---	---	---	---	---	---	---	---	---	Dacitic agglomerate.
TG65-81	---	---	---	---	---	---	10	---	---	---	---	---	Granite.

MINERAL RESOURCE POTENTIAL AND GEOLOGIC MAP OF THE HUSTON PARK ROADLESS AREA, CARBON COUNTY, WYOMING

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1983

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